

Health benefits of the Sun: Vitamin D can reduce the risk of cancer by as much as 67%

By Rhoda Wilson | Dec. 28th, 2023

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Vitamin D is involved in the biology of all cells in your body, including your immune cells. A large number of studies have shown raising your vitamin D level can significantly reduce your risk of cancer.

Most recently, researchers found vitamin D and calcium supplementation lowered participants' overall cancer risk by 30%.

Having a serum vitamin D level of at least 40 ng/ml reduces your risk for cancer by 67% compared to having a level of 20 ng/ml or less; most cancers occur in people with a vitamin D level between 10 and 40 ng/ml.

By [Dr. Joseph Mercola](#)

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Thousands of studies have been done on the health effects of vitamin D, and research shows it is involved in the biology of all cells and tissues in your body, including your immune cells. Your cells actually need the active form of vitamin D to gain access to the genetic blueprints stored inside.

This is one of the reasons why vitamin D has the ability to impact such a wide variety of health problems – from foetal development to cancer. Unfortunately, despite being easy and inexpensive to address, vitamin D deficiency is an epidemic around the world.

It's been estimated that as many as 90% of pregnant mothers and newborns in the sunny Mediterranean region are even deficient in vitamin D,¹ thanks to chronic Sun avoidance. A simple mathematical error may also deter many Americans and Canadians from optimising their vitamin D.

The Institute of Medicine (“IOM”) recommends a mere 600 IUs of vitamin D per day for adults. As pointed out in a 2014 paper,² the IOM underestimates the need by a factor of 10 due to a mathematical error, which has never been corrected.

Grassroots Health has created a petition for the IOM and Health Canada to re-evaluate its vitamin D guidelines and correct this mathematical error.³ You can help further this important cause by signing the petition on ipetitions.com.

More recent research⁴ suggests it would require 9,600 IUs of vitamin D per day to get a majority (97.5%) of the population to reach 40 nanograms per millilitre (ng/ml). The American Medical Association uses of 20 ng/ml as sufficient, but research shows 40 ng/mL should be the cutoff point for sufficiency in order to prevent a wide range of diseases, including cancer.

A large number of studies have shown raising your vitamin D level can significantly reduce your risk of cancer.

Most recently, a randomised clinical trial⁵ by researchers at Creighton University, funded by the National Institutes of Health (“NIH”), found vitamin D and calcium supplementation lowered participants’ overall cancer risk by 30%.^{6,7,8}

The study, which included more than 2,300 postmenopausal women from Nebraska who were followed for four years, looked at the effects of vitamin D supplementation on all types of cancer.

Participants were randomly assigned to receive either 2,000 IUs of vitamin D₃ in combination with 1,500 mg of calcium, or a placebo for the duration of the study. Blood testing revealed that 25-hydroxyvitamin D (25(OH)D) levels were significantly lower in those who did develop cancer.

Joan Lappe, Ph.D., professor of nursing and associate dean of research at Creighton University’s College of Nursing, and lead author of the study, said:

The study provides evidence that higher concentrations of 25(OH)D in the blood, in the context of vitamin D₃ and calcium supplementation, decrease risk of cancer ... While people can make their own vitamin D₃

when they are in the Sun near mid-day, sunscreen blocks most vitamin D production.

Also, due to more time spent indoors, many individuals lack adequate levels of vitamin D compounds in their blood. The results of this study lend credence to a call for more attention to the importance of vitamin D in human health and specifically in preventing cancer.

Previous research has shown that once you reach a serum vitamin D level of 40 ng/ml, your risk for cancer diminishes by 67%, compared to having a level of 20 ng/ml or less.^{9,10,11,12,13,14,15}

Most cancers, they found, occurred in people with a vitamin D blood level between 10 and 40 ng/ml. The optimal level for cancer protection was identified as being between 40 and 60 ng/ml. Another study¹⁶ published in 2015 found women with vitamin D concentrations of at least 30 ng/ml had a 55% lower risk of colorectal cancer than those who had a blood level below 18 ng/ml.

Even earlier research,¹⁷ published in 2005, showed women with vitamin D levels above 60 ng/ml had an 83% lower risk of breast cancer than those with levels below 20 ng/ml! The Health and Medicine Division of the National Academies of Sciences, Engineering and Medicine (formerly IOM) has also reported an association between vitamin D and overall mortality risk from all causes, including cancer.^{18,19}

Vitamin D also increases your chances of surviving cancer if you do get it,^{20,21} and this includes melanoma.²²

The UVB in sunlight is what triggers your body to produce vitamin D. I firmly believe getting regular, sensible Sun exposure is the ideal way to not only optimise your vitamin D level but maximise your health as well because sunlight also has many other important health functions. I'll review some of these in another section below.

Regular Sun exposure provides over 1,500 different wavelengths, and we're just now rediscovering the value of many of these other wavelengths besides UVA and

UVB. For example, we now know that red and infrared light helps your body form structured water, which is important for cellular function.

Many do not appreciate that red, near, mid and far-infrared have many important biological functions. One of them is to improve mitochondrial function, especially the 660 nm and 830 nm wavelengths, as cytochrome C oxidase in mitochondria uses these wavelengths to produce ATP more efficiently.

Vitamin D₃ supplements are a poor second resort, but if you're unable to get sufficient Sun exposure, then it's better than nothing. As demonstrated in the featured study – which specifically looked at the effects of supplementation – they do have some benefits.

Also, while not addressed in this study, I strongly recommend taking your vitamin D₃ with vitamin K₂ and magnesium as well, since all three work in tandem. A primary consideration when it comes to vitamin D is to get your level checked, ideally twice a year, in the middle of the summer and winter, when your level is at its highest and lowest.

What you're aiming for is a level between 40 and 60 ng/ml year-round. Grassroots Health offers vitamin D testing at a great value through its D*Action study.

Read more: [Harness the Power of the Sun for Health](#) (Infographic)

Many avoid Sun exposure for fear of melanoma, an aggressive and potentially lethal form of skin cancer. However, it's important to realise that melanoma occurs among those with minimal Sun exposure as well.

An important risk factor for melanoma is overexposure to UV radiation. Baking in the Sun for hours on end on a weekend here and there is not a wise choice.

To minimise your skin cancer risk, you want to avoid sunburn at all costs. If you're going to the beach, bring long-sleeved cover-ups and a wide-brimmed hat, and cover up as soon as your skin starts to turn pink.

Following are some general guidelines for sensible Sun exposure. If you pay close attention to these, you can determine, within reason, safe exposure durations.

- Know your skin type based on the Fitzpatrick skin type classification system. The lighter your skin, the less exposure to UV light is necessary. The downside is that lighter skin is also the most vulnerable to damage from overexposure.
- For very fair-skinned people and those with photodermatitis, any Sun exposure may be unwanted and they should carefully measure vitamin D levels while ensuring they have an adequate intake of vitamin D, vitamin K₂, magnesium and calcium.
- For most people, safe UV exposure is possible by knowing your skin type and the current strength of the Sun's rays. There are several apps and devices to help you optimise the benefits of Sun exposure while mitigating the risks. Also, be extremely careful if you have not been in the Sun for some time. Your first exposures of the year are the most sensitive, so be especially careful to limit your initial time in the Sun.

The benefits of vitamin D are not restricted to cancer prevention. In fact, the list of health benefits of vitamin D is exceedingly long. As noted earlier, researchers have now realised that vitamin D affects virtually every cell and tissue in your body, so it might be easier to list what it will not affect, rather than what it will impact.

Compelling evidence suggests that optimising your vitamin D can reduce your risk of death from any cause,²³ making it a foundational component of optimal health. Mega doses of vitamin D have also been shown to decrease the length of time critical care patients must remain hospitalised.²⁴ Those who received 250,000 IUs for five days were released after an average of 25 days, compared to the average of 36 days for those receiving a placebo.

Patients who received 500,000 IUs of vitamin D for five days were released after an average of just 18 days, effectively cutting their hospital stay in half. The health care savings in this instance alone are tremendous. When you add in all possible diseases and ailments vitamin D can prevent and/or ameliorate, the savings could potentially tally into the trillions each year.

Certainly, for the average person, optimising your vitamin D level is one of the least expensive preventive care strategies at your disposal. If you suffer from any of the following ailments and still haven't checked your vitamin D level, now may

be the time to go ahead and do so, as research ²⁵ into vitamin D has found it can help prevent and/or address:

Osteoporosis, osteomalacia (bone softening) and hip fractures	Type 1 and type 2 diabetes
Cancer , including cancers of the breast, colon, prostate, ovaries, oesophagus and lymphatic system.	Hypertension (high blood pressure), cardiovascular disease and heart attacks –
Adding vitamin D to the conventional treatment for pancreatic cancer may also boost the effectiveness of the treatment	(According to vitamin D researcher Dr. Michael Holick, deficiency can raise your risk of heart attack by 50%. What's worse, if you have a heart attack while vitamin D deficient, your risk of dying is nearly guaranteed)
26	
Obstructive sleep apnoea – In one study, 98% of patients with sleep apnoea had vitamin D deficiency, and the more severe the sleep apnoea, the more severe the deficiency ²⁷	Multiple sclerosis²⁸ (“MS”) – Research shows MS patients with higher levels of vitamin D tend to experience fewer disabling symptoms
Rheumatoid arthritis	Reduced immune function
Autoimmune diseases , including psoriasis	Infections , including influenza
Depression, ²⁹ Seasonal Affective Disorder and psychiatric conditions such as schizophrenia	Neurological disorders , including autism, dementia and Alzheimer's ³⁰
There's overwhelming evidence to suggest the human body evolved to obtain health benefits from, and to thrive in, sunlight. As previously noted in <i>The Daily Mail</i> : ³¹	

Even taking the skin cancer risk fully into account, [scientists] say that getting a good dose of sunshine is statistically going to make us live longer, healthier and happier lives.

One significant mechanism by which sunlight helps optimise your health is by triggering the release of nitric oxide (“NO”) when sunlight strikes your skin.

³² NO is a powerful blood pressure-lowering compound that helps protect your cardiovascular system, cutting your risk for both heart attacks and stroke.

According to one 2013 study,³³ for every single skin cancer death, 60 to 100 people die from stroke or heart disease related to hypertension. So, your risk of dying from heart disease or stroke is on average 80 times greater than your risk of dying from skin cancer.

Importantly, while higher vitamin D levels correlate with lower rates of cardiovascular disease, oral vitamin D supplements do not appear to benefit blood pressure, and the fact that supplements do not increase NO may be the reason for this. According to researcher Dr. Richard Weller:

We suspect that the benefits to heart health of sunlight will outweigh the risk of skin cancer. The work we have done provides a mechanism that might account for this, and also explains why dietary vitamin D supplements alone will not be able to compensate for lack of sunlight.

To get a thorough understanding of how UV light affects your cardiovascular function, read Weller's paper, '*Sunlight Has Cardiovascular Benefits Independently of Vitamin D*'.³⁴ Research also shows that UV light:

Helps treat and prevent the spread of diseases like tuberculosis.³⁵

Helps anchor your circadian rhythm, helping you sleep better.

Helps kill and prevent the spread of antibiotic-resistant bacteria. UV light at 254 nanometres acts as a potent bactericidal, killing drug-resistant strains of *S. aureus* and *E. faecalis* in as little as 5 seconds.³⁶

Reduces your risk of myopia (short-sightedness). As reported by *The Daily Mail*:³⁷ “[R]esearchers believe that the neurotransmitter dopamine is responsible. It is known to inhibit the excessive eyeball growth that causes myopia. Sunshine causes the retina to release more dopamine.”

Helps treat seasonal affective disorder and major depression.

³⁸ Schizophrenia has also been linked to maternal lack of Sun exposure during pregnancy.³⁹

Boosts men's libido by increasing testosterone. Research reveals men's testosterone levels rise and fall with the seasons. Researchers have also linked low vitamin D with an increased risk for erectile dysfunction.⁴⁰

Helps maintain vitamin D status in elderly people at a lower cost than that of using oral vitamin D supplementation.⁴¹ Not only could UV lamps help improve nursing home patients' physical health, but they could also help relieve symptoms of depression.

Lowers all-cause mortality. In one study,^{42,43} women who avoided Sun exposure had double the all-cause mortality rate of those who got regular Sun exposure. Another 54-month-long study,⁴⁴ involving more than 422,800 healthy adults, found that those who were most deficient in vitamin D had an 88% increased mortality risk.

Safe exposure to sunshine is possible by understanding your skin type, the UV strength at the time of exposure, and your duration of exposure. My advice has been clear: Always avoid sunburn. Once your skin develops the slightest tint of pink, cover up with clothing to avoid further exposure.

The most important part of the equation is to pay close attention to your vitamin D level. Ideally, get your vitamin D tested during the peak of summer and at the end of winter to help guide your UV exposure and vitamin D supplementation. The evidence is overwhelming: You really do need sensible Sun exposure for optimal health.

Since few foods contain any significant amount of vitamin D, and your body certainly was not designed to get its vitamin D from supplements, which are a modern invention, the only rational conclusion is that Sun exposure is the ideal way to raise your vitamin D level.

Research has shown just how beautifully your body has been designed to use the Sun's UV rays to promote health. It even has built-in "fail-safes" and self-regulatory processes to ensure you cannot produce too much vitamin D from Sun exposure. Plus, the vitamin D produced by UVB rays actually helps counteract the skin damage caused by UVA. It's an intricate dance that simply cannot be fully duplicated with a supplement.

- ¹ Ther Adv Musculoskelet Dis v.8(4); 2016 Aug

- ² [Nutrients 2014; 6\(10\): 4472-4475](#)
- ³ [ipetitions.com](#)
- ⁴ [Anticancer Research 2011 Feb;31\(2\):607-11](#)
- ⁵ [JAMA 2017;317\(12\):1234-1243](#)
- ⁶ [Lab Manager March 30, 2017](#)
- ⁷ [Newswise March 28, 2017](#)
- ⁸ [Time March 28, 2017](#)
- ⁹ [PLOS ONE 2016; 11 \(4\): e0152441](#)
- ¹⁰ [PR Web April 6, 2016](#)
- ¹¹ [UC San Diego Health April 6, 2016](#)
- ¹² [Science World Report April 13, 2016](#)
- ¹³ [Oncology Nurse Advisor April 22, 2016](#)
- ¹⁴ [Tech Times April 11, 2016](#)
- ¹⁵ [Chrisbeatcancer.com, Vitamin D](#)
- ¹⁶ [Cancer Prev Res \(Phila\). 2015 Aug;8\(8\):675-82](#)
- ¹⁷ [European Journal of Cancer 2005 May;41\(8\):1164-9](#)
- ¹⁸ [Institute of Medicine, Committee to Review Dietary Reference Intakes for Vitamin D and Calcium, Dietary Reference Intakes for Calcium and Vitamin D](#)
- ^{19, 44} [J Clin Endocrinol Metab 2013;98:2160-2167](#)
- ²⁰ [Anticancer Research February 2011: 31\(2\); 607-611](#)
- ²¹ [UC San Diego Health System Press Release March 6, 2014](#)
- ²² [Cancer Therapy Advisor March 23, 2016](#)
- ²³ [New York Times November 24, 2014](#)
- ²⁴ [Medical Press May 27, 2015](#)
- ²⁵ [Harvard T.H. Chan. Vitamin D](#)
- ²⁶ [Salk. FAQ on Pancreatic Cancer and Vitamin D](#)
- ²⁷ [Bel Marra Health May 3, 2016](#)
- ²⁸ [Mayo Clinic. Vitamin D and MS: Is There Any Connection?](#)
- ²⁹ [J Nutr Health Aging 1999;3\(1\): 5-7](#)

- ³⁰ [Int J Mol Sci. 2022 Dec 21;24\(1\):87. Vitamin D in Neurological Diseases](#)
- ^{31, 37} [Daily Mail May 2, 2016](#)
- ³² [Medical News Today May 8, 2013](#)
- ³³ [BBC News May 7, 2013](#)
- ³⁴ [Sunlight Institute January 18, 2016](#)
- ³⁵ [Science Daily March 17, 2009](#)
- ³⁶ [Ostomy Wound Management 1998 Oct;44\(10\):50-6](#)
- ³⁸ [Journal of Clinical Psychiatry 1991 May; 52\(5\): 213-6](#)
- ³⁹ [BBC News July 20, 2001](#)
- ⁴⁰ [New Hope Network May 2, 2016](#)
- ⁴¹ [Photodermatol Photoimmunol Photomed 2001 Aug;17\(4\):168-71](#)
- ⁴² [Journal of Internal Medicine 2014 Jul;276\(1\):77-86](#)
- ⁴³ [Business Insider May 7, 2014](#)

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